AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of extending time between chamber cleaning processes for a process chamber of a processing system, the method comprising:

introducing one or more first substrates into the process chamber;

performing a first manufacturing process on the one or more first substrates in the process chamber whereby a first film deposit is formed on a chamber component in the process chamber;

removing the one or more first substrates from the process chamber;

exposing [[a]]the chamber component in the process chamber to a reactant gas to form a particle-reducing film, wherein the particle-reducing film is:

~~an oxide or oxynitride film formed on a clean surface of the chamber component,~~

an oxide or oxynitride film formed on ~~a pre-existing~~ the first film deposit residing on the chamber component, or

a nitride, oxide or oxynitride film formed from at least a portion of ~~a pre-existing~~ the first film deposit residing on the chamber component;

introducing ~~at least~~ one or more second substrates into ~~in~~ the process chamber;

performing a second manufacturing process on the ~~at least~~ one or more second substrates in the process chamber whereby a new film deposit is formed on the particle-reducing film, and wherein the particle-reducing film reduces particle formation in the process chamber during ~~substrate~~ processing of the one or more second substrates from one or both of the ~~pre-existing~~ first film deposit or the new film deposit; and

removing the ~~at least~~ one or more second substrates from the process chamber.

2. (Original) The method according to claim 1, wherein the chamber component is a process tube, a wall, a gas supply line, a manifold, or a substrate holder or a combination of two or more thereof.

3. (Original) The method according to claim 1, wherein the particle-reducing film is an oxide film.

4. (Original) The method according to claim 1, wherein the particle-reducing film is a SiO_2 film.

5. (Original) The method according to claim 4, wherein the SiO_2 film is deposited by exposing the chamber component to an oxygen-containing gas and a silicon-containing gas.

6. (Original) The method according to claim 5, wherein the oxygen-containing gas includes at least one gas selected from the group consisting of O_2, O_3, NO, N_2O, and NO_2, and the silicon-containing gas includes at least one gas selected from the group consisting of SiH_4, Si_2H_6, Si_2Cl_6, SiH_2Cl_2, $SiHCl_3$, SiH_3Cl, $SiH_2(NHBu^t)_2$, and $Si(OC_2H_5)_4$.

7. (Original) The method according to claim 4, wherein the SiO_2 film is deposited by exposing the chamber component to a gas comprising $Si(OC_2H_5)_4$.

8. (Currently Amended) The method according to claim 1, wherein the reactant gas includes at least one gas selected from the group consisting of H_2O, O_2, O_3, N_2, NO, N_2O, NO_2, and NH_3 to form the nitride, oxide, or oxynitride film from at least a portion of the ~~pre-existing~~ first film deposit by chemically modifying and lowering the film stress of the ~~pre-existing~~ first film deposit.

9. (Currently Amended) The method according to claim 1, further comprising:

elevating the temperature of the chamber component from a first temperature to a second temperature and exposing the chamber component to the reactant gas at the second temperature; and

returning the temperature of the chamber component to the first temperature prior to introducing the ~~at least~~ one or more second substrates.

10. (Original) The method according to claim 9, wherein the exposing is performed at a process chamber pressure between about 10mTorr and about 100Torr.

11. (Currently Amended) The method according to claim 9, wherein the exposing further comprises purging and evacuating the process chamber prior to introducing the ~~at least~~ one or more second substrates.

12. (Original) The method according to claim 11, wherein the exposing, purging, and evacuating are repeated at least once.

13. (Original) The method according to claim 9, wherein the first temperature is between about 400°C and about 800°C.

14. (Original) The method according to claim 9, wherein the second temperature is between about 100°C and about 300°C greater than the first temperature.

15. (Original) The method according to claim 9, further comprising lowering the temperature of the chamber component from the second temperature to below the first temperature prior to returning the temperature of the chamber component to the first temperature.

16. (Currently Amended) The method according to claim 1, wherein the performing the first and second manufacturing processes comprise[[s]] performing a SiN manufacturing process, and wherein the first film deposit and the new film deposit ~~is~~ are SiN.

17. (Currently Amended) The method according to claim 1, wherein the performing the first and second manufacturing processes further comprise[[s]] providing a process chamber pressure less than about 100Torr.

18. (Currently Amended) The method according to claim 1, wherein the performing the first and second manufacturing processes further comprise[[s]] providing a process chamber pressure less than about 1Torr.

19. (Currently Amended) The method according to claim 1, further comprising repeating the sequence of exposing, introducing the one or more second substrates, performing the second manufacturing process, and removing the one or more second substrates at least once.

20. Cancelled

21. (Currently Amended) The method according to claim 1, further comprising repeating the sequence of introducing the one or more second substrates, performing the second manufacturing process, and removing the one or more second substrates at least once and until particle levels in the process chamber exceed a pre-determined level.

22. (Currently Amended) [[A]]The method of claim 5, wherein the performing the second manufacturing process comprises ~~extending time between chamber cleaning processes for a process chamber of a processing system, the method comprising:~~

~~exposing a chamber component in the process chamber to a silicon-containing and oxygen-containing reactant gas to form a SiO_2 film on a clean surface of the chamber component or on a pre-existing deposit residing on the chamber component;~~

~~introducing at least one substrate into the process chamber;~~

~~performing~~ a SiN manufacturing process in the process chamber whereby the new film

deposit is a SiN deposit ~~is~~ formed on the SiO_2 film, and wherein the SiO_2 film reduces particle formation in the process chamber during substrate processing from one or both of the ~~pre-existing~~ first film deposit or the SiN deposit~~; and~~

~~removing the at least one substrate from the process chamber~~.

23.-25. Cancelled

26. (Currently Amended) The method according to claim 22, wherein the SiN manufacturing process includes exposing the ~~at least~~ one or more second substrates to an organic silane-based precursor and a nitrogen-containing gas to deposit SiN on the ~~at least~~ one or more second substrates.

27. (Currently Amended) The method according to claim 22, wherein the SiN manufacturing process includes exposing the ~~at least~~ one or more second substrates to a bis-tertiary-butylamino-silane precursor in the presence of ammonia gas to deposit SiN on the ~~at least~~ one or more second substrates.

28. (Currently Amended) [[A]]The method of claims 8, wherein the performing the second manufacturing process comprises ~~extending time between chamber cleaning processes for a process chamber of a processing system, the method comprising:~~

~~exposing a pre-existing deposit on a chamber component in the process chamber to a reactant gas containing at least one of H_2O, O_2, O_3, N_2, NO, N_2O, NO_2, and NH_3 to chemically modify at least a portion of the pre-existing deposit to thereby form a nitride, oxide or oxynitride film on the chamber component;~~

~~introducing at least one substrate in the process chamber;~~

~~performing~~ a SiN manufacturing process in the process chamber whereby the new film deposit is a SiN deposit ~~is~~ formed on the particle-reducing film~~, and wherein the film reduces~~

~~particle formation in the process chamber during substrate processing from one or both of the pre-existing deposit or the SiN deposit; and~~

~~removing the at least one substrate from the process chamber~~.

29.-31. Cancelled

32. (Currently Amended) The method according to claim 28, wherein the SiN manufacturing process includes exposing the ~~at least~~ one or more second substrates to an organic silane-based precursor and a nitrogen-containing gas to deposit SiN on the ~~at least~~ one or more second substrates.

33. (Currently Amended) The method according to claim 28, wherein the SiN manufacturing process includes exposing the ~~at least~~ one or more second substrates to a bis-tertiary-butylamino-silane precursor in the presence of ammonia gas to deposit SiN on the ~~at least~~ one or more second substrates.

34. Cancelled

35. (New) A method of extending time between chamber cleaning processes for a process chamber of a processing system, the method comprising:

introducing one or more first substrates into the process chamber and heating a chamber component in the process chamber to a first temperature;

performing a first manufacturing process on the one or more first substrates in the process chamber at the first temperature whereby a first film deposit is formed on the chamber component in the process chamber;

removing the one or more first substrates from the process chamber;

elevating the temperature of the chamber component in the process chamber to a second temperature greater than the first temperature;

exposing the first film deposit on the chamber component in the process chamber to a reactant gas at the second temperature, wherein the reactant gas contains at least one of H_2O, O_2, O_3, N_2, NO, N_2O, NO_2, and NH_3 to chemically modify at least a portion of the first film deposit to thereby form a nitride, oxide or oxynitride particle-reducing film on the chamber component;

lowering the chamber component in the process chamber to the first temperature;

introducing one or more second substrates into the process chamber;

performing a second manufacturing process on the one or more second substrates in the process chamber at the first temperature whereby a new film deposit is formed on the particle-reducing film, and wherein the particle-reducing film reduces particle formation in the process chamber during processing of the one or more second substrates from one or both of the first film deposit or the new film deposit; and

removing the one or more second substrates from the process chamber.

36. (New) The method according to claim 35, wherein the chamber component is a process tube, a wall, a gas supply line, a manifold, or a substrate holder or a combination of two or more thereof.

37. (New) The method according to claim 35, wherein the first temperature is between about 400°C and about 800°C.

38. (New) The method according to claim 35, wherein the second temperature is between about 100°C and about 300°C greater than the first temperature.

39. (New) The method according to claim 35, wherein lowering the chamber component to the first temperature includes lowering the chamber component from the second temperature to a

third temperature below the first temperature and then returning the temperature of the chamber component to the first temperature.

40. (New) The method according to claim 35, wherein the performing the first and second manufacturing processes comprises performing a SiN manufacturing process, and wherein the first film deposit and the new film deposit is SiN.

41. (New) The method according to claim 35, further comprising repeating the introducing the one or more second substrates, performing the second manufacturing process, and removing the one or more second substrates at least once and until particle levels in the process chamber exceed a pre-determined level.